Construction and Operation of Rural Intelligent Logistics System under the Background of Sharing Economy

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Abstract

Currently, China's logistics industry is transforming and upgrading towards an intelligent ecosystem of technology empowerment, intelligent control, and proactive response. With the continuous promotion of "new infrastructure" such as 5G technology, big data, and artificial intelligence, it has provided strong support for the integration of the sharing economy into the construction of rural intelligent logistics system. Since 2016, the application of logistics robots has become increasingly widespread, and intelligent logistics equipment has been further popularized. By introducing technologies such as automatic sorting, intelligent warehousing, and data decision-making, efforts have been made to introduce and train intelligent talents in rural logistics, effectively making up for the shortcomings of rural logistics in terms of technology and talent. Based on this, by restructuring the rural logistics system with the core of "sharing + wisdom", it will effectively alleviate the plight of rural logistics, broaden the development space of the rural logistics industry, and help rural logistics achieve intelligent upgrading. As a weak link in the modern logistics system, rural logistics should fully grasp the opportunities for the construction of intelligent logistics, cultivate rural logistics operation entities through the introduction of the concept of sharing economy, build a shared rural logistics information platform, efficient collaborative logistics distribution network, and adopt scientific and reasonable logistics operation modes to promote the benign construction and high-quality operation of the rural logistics system.

Keywords

Sharing economy, Rural, Intelligent logistics, System construction, Run policy

1. Question raising

As the e-commerce economy and digital economy continue to mature, the supporting position of the logistics industry is increasingly evident. Compared with the urban logistics system with a clear division of labor and a complete system, the rural logistics system has problems such as high logistics costs, insufficient industrial coordination, and low circulation efficiency, which makes it difficult to effectively respond to the new requirements for the development of the rural digital economy. Facing the macro background of the sharing economy, building a rural logistics system with the core of "wisdom + sharing" has become one of the important demands to enjoy the dividends of digital rural areas and promote the coordinated development of the rural economy and logistics system.

Currently, academic circles have conducted systematic research on the construction and application of rural in-
telligent logistics systems in the context of a sharing economy, and have achieved certain research results. Wang Zhihong (Wang Zhihong, 2021), based on defining the basic concepts and key features of intelligent logistics, proposed strategies to clarify the innovative strategic objectives of intelligent logistics, improve intelligent logistics technology, and expand the supply of composite logistics talents, in response to the difficulties faced by intelligent logistics such as low technical efficiency, economic environmental pressure, and insufficient talent supply, providing a reference for the construction of rural intelligent logistics systems. Han Jiawei et al. (2021) analyzed the development status of intelligent logistics of agricultural products in China from the perspectives of legal policies, infrastructure, and intelligent construction based on the demand for intelligent logistics of agricultural products. In combination with the development goals of intelligent logistics in 2025 and 2035, they believed that it is necessary to combine the operational needs of intelligent logistics of agricultural products, improve supporting logistics standards, break through core technologies, and build intelligent Green agricultural product logistics chain. Yi Shaohua (2021) analyzed the effectiveness of rural intelligent logistics construction, and believed that the rural logistics system has shortcomings in areas such as information construction, market participation, standardization construction, and business methods, which are not conducive to the construction of a modern circulation system. He proposed suggestions on improving the standards and regulations of intelligent logistics, optimizing the logistics distribution service network, and cultivating rural logistics operation entities.

The current research demonstrates the necessity and practical feasibility of constructing a rural intelligent logistics system from the perspectives of theory and practical cases, and discusses the problems and solutions in the construction of rural intelligent logistics. However, most of them are cut from the perspective of smart logistics; fail to effectively integrate into the digital economy, sharing economy, and other era environments, and lack a reasonable mechanism to drive the long-term operation of rural smart logistics. Based on this, this article will take the sharing economy as the macro background, focus on the construction of rural intelligent logistics system, build a rural logistics system with "wisdom + sharing" as the core, and propose relevant operational suggestions.

2. Research Framework for Constructing Rural Intelligent Logistics System under the Background of Sharing Economy

2.1 Research object

The research object of the construction of rural intelligent logistics system under the background of sharing economy is: the construction strategy and operating mechanism of rural intelligent logistics system integrated into the sharing economy. The sharing economy is a new economic form oriented towards improving people's wellbeing and focusing on the rational allocation of scattered and idle resources. By establishing a smart and shared logistics platform based on a shared economy in terms of functional objectives, policy mechanisms, and operational mechanisms, it will effectively adjust and optimize the traditional rural smart logistics system, break the conceptual bias of focusing solely on technology, and solve the practical bottleneck of insufficient sharing of rural logistics resources, thereby effectively coordinating the rural e-commerce economy and broadening the development space of the rural logistics industry. Finally, the optimal allocation and rational application of rural resources will be achieved (Li Hongmei & Zhou Chong, 2021).

2.2 Research ideas

As a new economic form, the sharing economy, relying on intelligent technology and modern management thinking will fully utilize rural resources and assist in the upgrading of rural industries. By establishing a "sharing + intelligence" logistics platform, it can help release and resolve operational risks such as relatively dispersed rural logistics resources and weak competitiveness, properly address practical issues such as high terminal distribution costs and insufficient standardized management in rural logistics, and thereby achieve the goals of value co-creation, value addition, and value sharing. Therefore, under the concept of sharing economy, building a rural intelligent logistics system should aim at value sharing, improve the rural logistics industry ecosystem, and assist rural logistics and related industries to achieve resource sharing and value appreciation by proposing common value propositions. The research will follow the idea of "problem posing - theoretical support - system construction - operational suggestions", analyze the driving force behind the integration of the sharing economy into the rural logistics system, interpret the integration advantages of the sharing economy and the rural intelligent logistics system, and explore reasonable operational suggestions to improve the efficiency of the rural logistics industry.
2.3 Theoretical basis

The rural smart logistics system in the context of a sharing economy is driven by smart technology, with the goal of value co-creation and sharing. By taking the concept of a sharing economy as the core, it builds a smart driven, diversified and shared modern logistics system, comprehensively improving the profitability and service quality of rural logistics. Intelligent logistics is an important product of the deep integration of digital economy and modern logistics. It refers to a modern logistics model that utilizes intelligent software and hardware, big data, and other technical means to transform logistics service methods, innovate logistics management systems, and promote intelligent decision-making and automatic operation of logistics systems. The sharing economy is a sharing economy model that recombines and reuses idle resources (Yang Mingyu, 2021). It is a business model that realizes value-added and win-win development through resource sharing. Shared logistics is an important field of the sharing economy. By sharing resources such as logistics infrastructure, logistics information, logistics technology, and logistics distribution, it can optimize the allocation of logistics resources while helping to comprehensively upgrade the logistics system.

3. Construction of rural intelligent logistics system under the background of sharing economy

3.1 Core functions of rural "sharing + wisdom" logistics system

Building a rural intelligent logistics system is an important entry point for cultivating new growth points of the rural economy, promoting the flow of urban and rural resources, and promoting the integration and high-quality development of rural multiple industries in the context of a sharing economy. By utilizing smart logistics technologies such as big data and the Internet of Things, optimize logistics information, capital allocation, and logistics service processes, and build a "smart + shared" logistics system that includes multiple functions such as business management, supply chain management, and service management [5]. Firstly, based on big data applications, carry out intelligent logistics business management. Smart logistics business management mainly includes logistics information control, dynamic distribution, and intelligent transportation. By building a shared warehouse base, sharing logistics distribution equipment and staff, optimizing logistics routes, and improving logistics business efficiency. The second is to carry out logistics service quality management guided by improving service quality. By formulating jointly observed logistics quality and service quality management standards, we will promote the evaluation and management of logistics service quality to achieve comprehensive and full process coverage, and provide guarantee for achieving the goal of "sharing + wisdom". Third, expand the development space of rural logistics industry by extending the chain construction. Based on the sharing economy platform and supported by the rural intelligent logistics system, we will break industrial boundaries, improve the coordination mechanism between the logistics chain, industrial chain, and economic chain, and build an intelligent, orderly, and stable collaborative rural industrial economic system.

3.2 Elements of rural "sharing + wisdom" logistics system

Under the concept of sharing economy, through improving top-level design, increasing investment in technology, talent, and capital, orderly promote the construction of rural "sharing + intelligence" logistics system. One is to have sound policy support. The rural "sharing + wisdom" logistics system is an important way to build a digital village and boost rural revitalization. However, the current rural industrial foundation is relatively weak, and it is necessary to further improve the policy system in the field of rural logistics. By focusing on the development and expansion of the rural logistics industry, a policy system covering multiple fields such as financial services, policy preferences, and resource allocation has been developed to provide policy support for the construction of a rural smart logistics system. The second is to have relatively complete software and hardware systems such as logistics sites, facilities, and technology. Based on intelligent warehousing and logistics information platforms, we should actively introduce new technologies and intelligent equipment in the logistics industry, reasonably predict logistics information through innovative rural logistics business processes and service models, effectively reduce logistics damage and cost expenditures, and provide technical support for continuously improving the efficiency of the rural logistics industry. The third is to have relatively systematic skilled personnel. The building a rural "sharing + wisdom" logistics system involves many fields such as warehousing, transportation, finance, technology, and requires versatile skilled personnel. Therefore, in order to promote the orderly construction and reasonable operation of the
rural intelligent logistics system, attention should be paid to cultivating intelligent logistics talents with high professional quality and in line with actual needs.

3.3 Business process of rural "sharing + wisdom" logistics system

Building a "wisdom + sharing" rural logistics system is not only an effective means to solve the difficulties of rural logistics development, but also an active attempt to awaken rural leisure resources relying on the sharing economy. In the process of building a rural "sharing + smart" logistics system, it is necessary to take optimizing the rural smart logistics service chain as the core, guided by the concept of sharing economy, and reshape business processes from the perspectives of timeliness, efficiency, and standardization of logistics services. First, in the business process, it is necessary to rely on a shared logistics platform to provide support for customers to choose logistics service enterprises with higher cost performance through the construction of transparent and standard logistics business processes, and also provide guidance for rural logistics enterprises to optimize logistics services. Secondly, in the logistics and distribution process, it is necessary to reasonably optimize the logistics route and distribution system based on cost expenditure and service efficiency. By building a shared warehouse, sharing terminal logistics network, and sharing terminal logistics staff, we can not only provide customers with efficient and high-quality logistics services, but also ensure that the rural logistics system achieves maximum efficiency and benefits. Thirdly, in the logistics decision-making process, it is necessary to focus on intelligent decision-making and intelligent execution, and build a closed-loop intelligent logistics system by improving demand forecasting, idle asset sharing, vehicle cargo matching optimization, and service quality evaluation.

4. Suggestions on the operation of rural intelligent logistics system under the background of sharing economy

4.1 Strengthen the technical foundation and promote the intelligent and shared development of rural logistics system

Information technology is a key factor in promoting the construction of a rural intelligent logistics system, as well as an important force driving the cross-border and chain development of rural logistics industry. First, by introducing drone technology to cover relatively remote rural areas, expanding the scope of logistics distribution, improving logistics efficiency, truly solving the practical problem of "the last mile" of rural logistics distribution, and helping rural logistics achieve cost reduction and efficiency increase. The second is to make full use of image recognition technology, remote sensing technology, and other means to build a modern logistics management system that includes intelligent integration of quality management, operational process management, and effectively eliminate the blind spots in logistics services and quality management. Third, it is necessary to incorporate smart systems into the entire process of rural logistics system management, and ensure that the rural smart logistics system achieves risk sharing and benefit sharing by fully collecting operational data of the logistics system, timely studying and judging the potential risks of the system.

4.2 Improve the support system and create a high-quality development environment for rural logistics system

The rural intelligent logistics system is a new logistics form based on the digital economy and characterized by automation and intelligence. To this end, it is necessary to focus on cultivating "composite" logistics talents, improve policy systems, financial support, and create an intelligent development environment to assist the rural logistics industry. Firstly, it is necessary to take improving the ability structure and comprehensive quality of "practitioners" as a logical starting point, continuously optimize the labor structure through conducting necessary skill training, and comprehensively improve the comprehensive quality of rural logistics practitioners. The second is to introduce shared financial resource models such as mutual insurance and cooperatives based on the principle of cooperative system, fully gather and accommodate idle rural funds, reduce operational risks and insurance rates in the logistics industry, fill the financial gap in rural logistics, and provide financial support for the rural logistics industry lacking "foreign aid finance". Third, improve supporting policies to promote the construction of rural smart logistics, optimize the development environment of rural smart logistics, and drive high-quality market resources to participate in the development of the rural logistics industry by doing a good job in policy support, fi-
nancial support, and technology introduction.

4.3 Innovate development models and continuously improve the profitability of rural logistics systems

Building a rural smart logistics system based on a sharing economy requires exploring a shared development model with multiple industries participating and multiple chains collaborating, driven by smart technology and supported by sharing platforms. On the one hand, guided by the concept of a sharing economy, the "crowd sourcing model" and "crowd funding model" have been introduced into the rural intelligent logistics system. By introducing intelligent logistics software and hardware systems, integrating multiple resources such as logistics warehousing, freight forwarding, supply chain finance, and attracting forces such as logistics enterprises, internet enterprises, agricultural product enterprises, and suppliers, we build a smart logistics platform for benefit sharing, thereby breaking barriers to logistics data sharing and resource sharing, and comprehensively improving the profitability of the rural smart logistics system. On the other hand, it is necessary to take the logistics sharing platform and logistics information system as the foundation, integrate fragmented logistics information and scattered logistics resources, adopt a unified standard, enterprise led, market-oriented development model of intelligent logistics, and achieve intelligent upgrading while improving the operational efficiency of the logistics system.

References


